# TECHNICAL REVIEW DOCUMENT For OPERATING PERMIT 100PPB357

Vestas Towers America Facility
Pueblo County
Source ID 1011151

December 2011 – January 2012, June 2012

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Operating Permit Supervisor review: Matthew S. Burgett

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### I. Purpose

This document establishes the basis for decisions made regarding the Applicable Requirements, Emission Factors, Monitoring Plan and Compliance Status of Emission Units covered within the Operating Permit proposed for the Vestas Towers America Facility. It is designed for reference during review of the proposed permit by the EPA, the Public and other interested parties.

Conclusions made in this report are based on information provided by the applicant in the Title V permit application submitted on October 20, 2010, additional information received December 1, 2010, various e-mail correspondences with the source and review of Division files. This narrative is intended only as an adjunct for the reviewer and has no legal standing.

Any revisions made to the underlying construction permits associated with this facility made in conjunction with the processing of this operating permit application have been reviewed in accordance with the requirements of Regulation No. 3, Part B, Construction Permits, and have been found to meet all applicable substantive and procedural requirements. This operating permit incorporates and shall be considered to be a combined construction/operating permit for any such revision, and the permittee shall be allowed to operate under the revised conditions upon issuance of this operating permit without applying for a revision to this permit or for an additional or revised construction permit.

## II. Description of Source

The Vestas Towers America Facility is a wind turbine tower production facility and is defined under Standard Industrial Classification 3441. The facility consists of eight paint booths equipped with ventilation systems. Each booth has two sections: one for epoxy coating and one for urethane coating. Each ventilation system utilizes filter media to control particulate matter from overspray. Metallization also occurs as part of the manufacturing of industrial steel wind turbine towers. Fugitive particulate emissions due to hauling, blasting, cutting, rolling, welding, and painting steel plates are also present at this facility. This source also operates two emergency diesel generators.

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The facility is located in Pueblo and the area in which the plant operates is designated as attainment for all criteria pollutants. There are no affected states within 50 miles of the plant. The following Federal Class I designated areas are within 100 kilometers of the plant: Great Sand Dunes Wilderness Area.

Based on the information provided by the applicant, this source is categorized as a minor stationary source for PSD as of the issue date of this permit. Any future modification which is major by itself (Potential to Emit of > 250 TPY) for any pollutant listed in Regulation No. 3, Part D, Section II.A.42 for which the area is in attainment or attainment/maintenance may result in the application of the PSD review requirements.

The reportable potential to emit for all units at this facility is listed in the table below:

Emission Unit	Potential to Emit (tons/year)					
Emission onit	$NO_X$	CO	VOC	PM	PM <sub>10</sub>	PM <sub>2.5</sub>
Paint Booths			247.0	82.0	55.0	55.0
Generators*	7.6	5.3	2.2			
Fugitive Particulates				6.4	2.1	0.3
Metallization				4.6	4.6	1.2
Total	7.6	5.3	249.2	93.0	61.7	56.5

<sup>\*</sup>PTE for the generators was calculated assuming 500 hours of operation annually using the emission standards from NSPS Subpart IIII.

HAP emissions for this facility are above the major source level for both individual (xylene) and total HAP thresholds.

#### Compliance Assurance Monitoring (CAM)

Uncontrolled particulate matter emissions from the painting operations are above the major source level. The control equipment on the paint booths are used to meet their emission limitations, therefore CAM applies to this emission unit. However, since controlled emissions are below the major source level, CAM does not apply until the renewal of this permit (40 CFR Part 64 §64.5(b)).

#### **NESHAP Subpart MMMM**

This facility manufactures and coats metal wind turbine towers and is subject to the requirements in 40 CFR Part 63 Subpart MMMM for Surface Coating of Miscellaneous Metal Parts and Products. Under the rule, this source is considered new, as it commenced construction after August 13, 2002. The only coating activities that occur at this facility fall under the definition of general use coating. The rule requires new general use coating sources to limit organic HAP emissions to 1.9 lb/gallon of coating solids used. Subpart MMMM provides for several compliance options. Vestas indicated that the compliance option used at the facility is the emission rate without add-on controls; the appropriate applicable requirements for this compliance option have been included in the operating permit. Vestas has the opportunity to use an alternative

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compliance option and should notify the Division in writing prior to the change: a note has been added to the operating permit.

#### NSPS Subpart IIII

Two generators at this facility are subject to the requirements in 40 CFR Part 60 Subpart IIII for stationary compression ignition internal combustion engines. Applicability of this subpart is based on the construction date, date of manufacture, model year, displacement, and maximum engine power. The emergency generators at this facility were constructed and manufactured after the applicability dates of July 11, 2005 and April 1, 2006, respectively. For engines newer than 2007 model year with a displacement less than 10 liters per cylinder and a maximum engine power rate between 50 and 3,000 HP, the engines must follow the emission standards for new nonroad engines from 40 CFR Part 89 Subpart B, §§89.112 and 89.113. The requirements from §89.113 include smoke standards, which are not applicable, pursuant to §89.113(b)(3) since the generator is considered a constant-speed engine. The engines are also subject to nonroad fuel restriction requirements in 40 CFR Part 80 Subpart I.

### **NESHAP Subpart ZZZZ**

The engines at this facility are subject to the major source requirements in 40 CFR Part 63 Subpart ZZZZ for stationary reciprocating internal combustion engines. Both emergency generators were constructed after December 19, 2002 and are therefore considered new under the rule. In accordance with §63.6590(b)(1)(i), as new emergency engines greater than 500 hp, these engines do not have to meet the requirements of Subpart ZZZZ or of Subpart A, except for the initial notification requirements. The source was required to submit the initial notification to the Division 120 days after startup, which occurred on October 19, 2009. The facility is also required to meet the definition of an emergency engine by complying with the requirements in §63.6640; these provisions were included in the operating permit.

#### **Greenhouse Gases**

Potential greenhouse gas emissions from this facility do not exceed 100,000 tons per year CO<sub>2</sub>e. Future modifications resulting in an emissions increase greater than 100,000 tons per year CO<sub>2</sub>e may be subject to regulation.

### Source Determination

The last evaluation of the single source status of this facility was conducted during the initial review of the construction permit which was issued on October 17, 2008. This analysis found the Vestas facility to be appropriately defined as a single source. There have been no changes to the facility or surrounding operations that merit revisiting this determination.

#### III. Emission Sources

PBO: Eight (8) paint booths; exhaust vents are equipped with over-spray filters to control particulate emissions.

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Applicable Requirements: Initial approval of modification 1 of construction permit 08PB0896 is the current effective permit for painting equipment. The source applied for a second modification to the permit which has been drafted. However, during the permit processing period, several concerns arose and additional modifications were necessary prior to issuance. The source requested to incorporate the construction permit modifications into their Title V application and cancel the construction permit modification application. The draft modification 2 of the construction permit has been incorporated into the permit as follows. Self-certification has not yet been submitted and a final approval permit has not been issued for the currently effective construction permit. Under the provisions of Colorado Regulation No. 3, Part C, Section V.A.2, the Division will not issue a final approval construction permit and is allowing the initial approval construction permit to continue in full force and effect and will consider the Responsible Official certification submitted with first semi-annual monitoring and deviation report required by this operating permit to serve as the demonstration required pursuant to Colorado Regulation No. 3, Part B, Section III.G.2.

- Self-certification for final approval requirements (Conditions 1- 5).
   As discussed above, final approval for this permit will not be issued and the requirements to self-certify will not apply.
- Emissions of air pollutant from shall not exceed the following limitations (Condition 6):

AIRS	Emissions (tons per rolling 12 months)				
Point	PM	PM <sub>10</sub>	$PM_{2.5}$	VOC	
001	37.6	25.5	25.4	210.5	
004	2.5	2.5	0.6		
Total	40.2	28.0	26.1	210.5	

The limitation for AIRS point 001 includes emissions from both painting and abrasive blasting operations. These are distinctly different operations in function and location that vent to separate stacks. The emission factors for each point are unique and unrelated and the two emission units should not be grouped on a single APEN under a single AIRS point in accordance with Colorado Regulation No. 3, Part A, Section II.B.4. The two emissions units are now considered separate sources and the individual emissions limitations have been disaggregated accordingly. Actual uncontrolled emissions from the steel shot blasting is below APEN reporting thresholds using AP-42 emission methodology and has been moved to insignificant activity. The emission limitations for the painting operations and metallization were included separately in the operating permit and increased as requested in an APEN submitted November 16, 2012.

The maximum tower manufacturing capacity for the facility results in uncontrolled emissions over 250 tons per year, which would trigger PSD review as a relaxation of permit terms. For this reason the facility is accepting a synthetic limit of 247 tons per year. VOC emissions from the generators and insignificant activity are below 2 tons per year.

While the source is limited in emissions, the production rate listed in the permit

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reflects the maximum capacity of the facility. In the future, the facility has plans to implement control technologies to allow them to reach their maximum capacity without exceeding the 247 tons per year limitation. The installation of such control technology will be reflected in an APEN submittal to the Division.

The emission points in the table below shall be maintained and operated with the
control equipment as listed. The uncontrolled emissions shall be reduced by at
least the control efficiencies listed. Operating parameters of the control
equipment shall be identified in the operating and maintenance plan. The
identified operating parameters will replace the control efficiency requirement on
the final permit. (Condition 7)

Facility Equipment ID	AIRS Point	Control Device	Controlled Pollutants	Control Efficiency
Painting	001	Exhaust filters	PM	90.0 %
Abrasive blasting	001	Complete Enclosure	PM	95.0 %
Metallization	004	Bag filters	PM	90.0 %

As mentioned above, the Title V operating permit will serve as the final permit for this equipment. As such, appropriate operating parameters have been included in the permit in lieu of the control efficiency requirements.

• The source shall be limited to the maximum consumption rate as listed below:

Steel Grit blasting medium
 Metalizing wires
 485.0 tons/year
 72.5 tons/year

Compliance with the emissions limits in this permit shall be demonstrated by adequate recordkeeping. The permit holder shall keep a compliance record on site for Division review. See Attachment A for an example of recordkeeping format. (Condition 8)

The annual consumption limitation for the metalizing wire was included in the operating permit. The consumption limit was increased from the levels in the construction permit in accordance with an APEN submitted November 16, 2012. As mentioned above, the abrasive blasting operations have insignificant emissions and were not included in the operating permit. Additionally, the consumption of paints and solvents is a necessary parameter in calculating VOC emissions and therefore a requirement to record paint and solvent use was included in the operating permit.

The example recordkeeping format from Attachment A of the construction permit was included in the appendix to the operating permit.

• Visible emissions shall not exceed twenty percent (20%) opacity during normal operation of the source. During periods of startup, process modification, or adjustment of control equipment visible emissions shall not exceed 30% opacity for more than six minutes in any sixty consecutive minutes. Opacity shall be measured by EPA Method 9. (Condition 9)

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The opacity limitation was included in the operating permit for the abrasive blasting and metallization processes only. The only scenario in which the 30% opacity limitation would apply to this source is during adjustment of control equipment.

 This source is subject to the odor requirements of Regulation No. 2 (State only enforceable) (Condition 10)

This requirement is included in the General Conditions of Section IV and therefore was not included in the specific conditions of the operating permit.

- This source is subject to the requirements of Regulation No. 7.V. regarding Disposal of Volatile Organic Compounds as follows: (Condition 11)
  - No person shall dispose of volatile organic compounds by evaporation, or spillage unless RACT is utilized. (Regulation No.7.V A)

The requirements of Regulation No. 7 Section V are included in the General Conditions in Section IV and were not included in the specific conditions of the operating permit.

- All parts of this facility engaged in the painting operations are subject to the requirements of 40 CFR Part 63 Subpart MMMM—National Emission Standards for Hazardous Air Pollutants for Surface Coating of Miscellaneous Metal Parts and Products (Regulation No. 8, Part E, Subpart MMMM). The source must meet the following HAP emission standard to comply with this subpart: (Condition 12)
  - Emission of organic HAP shall not exceed 1.9 pound organic HAP per gal coating solids used during each 12-month compliance period.

While not explicitly stated in the permit, the source is also subject to the recordkeeping and reporting requirements in NESHAP Subpart MMMM. Detailed applicable requirements were included in the operating permit. The source has indicated they will use the emissions without add-on control as their compliance option.

 Upon startup of these points, the applicant shall follow the operating and maintenance (O&M) plan and record keeping format approved by the Division, or for new sources, the operating and maintenance (O&M) plan and record keeping format submitted to the Division for review and approval, in order to demonstrate compliance on an ongoing basis with the requirements of this permit. Revisions to your O&M plan are subject to Division approval prior to implementation. (Condition 13.)

The appropriate provisions from the operating and maintenance plan were included directly as requirements in the operating permit.

 Within 180 days of issuance of this permit, the owner or operator shall demonstrate compliance with Condition 9, using EPA Method 9 to measure opacity from the facility stacks. (Condition 14)

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Opacity readings have already been conducted on the equipment, which did not change with the modification to the construction permit. The test conducted demonstrated compliance with the opacity standards and therefore an additional initial compliance test is unnecessary. Compliance will be assumed given that the control equipment is operating and maintained in accordance with manufacture's recommendation and the operating parameters outlined in the Division-approved operating and maintenance plan.

- A source initial compliance test shall be conducted on volatile materials usage to measure the emission rate(s) for the pollutants listed below in order to demonstrate compliance with HAP emission limit required in condition no. 12 above. The test protocol must be in accordance with the requirements of the Air Pollution Control Division Compliance Test Manual and shall be submitted to the Division for review and approval at least thirty (30) days prior to testing. No compliance test shall be conducted without prior approval from the Division. Any compliance test conducted to show compliance with a monthly or annual emission limitation shall have the results projected up to the monthly or annual averaging time by multiplying the test results by the allowable number of operating hours for that averaging time (Condition 15)
  - Hazardous Air Pollutants using EPA approved methods.

This condition requires performance testing to comply with the NESHAP Subpart MMMM emissions limitation. While omitted in the construction permit, the Subpart itself includes specific provisions for demonstrating initial compliance with the applicable emissions standards. The facility has already submitted to the Division an initial compliance demonstration in accordance with Subpart MMMM. Additional performance testing is not necessary to demonstrate compliance with the federal NESHAP and this condition was not included in the operating permit.

 This painting operation may be subject to periodic testing requirements as specified in the operating and maintenance (O&M) plan. Revisions to your O&M plan are subject to Division approval. (Condition 16)

The Division-approved O&M plan does not include testing requirements for the painting operations. Since this condition includes no specific requirements it was not included in the operating permit.

• Previous versions of this permit are canceled upon issuance of this permit. (Condition 17)

This condition applies only to the construction permit issuance and was not included in the operating permit.

• The permit number shall be marked on the subject equipment for ease of identification. (State only enforceable) (Condition 18)

This is a construction permit only condition and was not included in the operating permit.

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APEN reporting requirements (Condition 19)

The APEN reporting requirements are included in Section IV (General Conditions) Condition 22.e of the operating permit.

 This source is subject to the provisions of Regulation No. 3, Part C, Operating Permits (Title V of the 1990 Federal Clean Air Act Amendments). The provisions of this construction permit must be incorporated into the operating permit associated with this facility. The application for the Operating Permit is due within one year of the initial commencement of operation of the facility covered by this permit. (Condition 10)

This source has submitted an application for an operating permit and is being issued a permit with this action; therefore, this requirement has not been included in the permit.

 Prevention of Significant Deterioration (PSD) requirements shall apply to this source at any such time that this source becomes major solely by virtue of a relaxation in any permit condition. Any relaxation that increases the potential to emit above the applicable PSD threshold will require a full PSD review of the source as though construction had not yet commenced on the source. The source shall not exceed the PSD threshold until a PSD permit is granted. (Condition 21)

This condition was not included in the operating permit since no specific requirements apply. The PSD status of the facility is discussed in Section I of the operating permit. The source has accepted a synthetic minor limit to avoid the PSD requirements.

**Emission Factors:** Emissions of particulate matter and VOC from the use of volatile product are calculated using a mass balance approach based on the composition and consumption of each product. The particle size distribution assumptions used to establish emission factors are based on an average of fabric filter testing results in an EPA publication.

**Monitoring Plan:** In order to monitor compliance with the annual emission and material consumption limits, the source is required to monitor consumption of metallization materials and volatile products and calculate emissions on a monthly basis.

**Compliance Status:** The source was issued a Compliance Order on Consent on September 11, 2012 for violations of the previous construction permit issuance. Several of the issues that initiated the enforcement action are resolved with the issuance of this permit.

GEN: Two (2) Cummins Model QSK50-G4 NR2 Generators, site rated at 1848 HP

**Applicable Requirements:** Final approval of modification 1 of construction permit 09PB1066 was issued for the engines on March 14, 2012. The appropriate applicable requirements from the final approval construction permit 09PB1066 have been incorporated into the permit as follows:

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 Visible emissions shall not exceed twenty percent (20%) opacity during normal operation of the source. During periods of startup, process modification, or adjustment of control equipment visible emissions shall not exceed 30% opacity for more than six minutes in any sixty consecutive minutes. Opacity shall be measured by EPA Method 9. (Reference: Regulation 1, Section II.A.1. & 4.) (Condition 1).

The opacity limitations were included in the operating permit. The Division considers the only situation in which the 30% opacity limit applicable is during startup.

• The permit number shall be marked on the subject equipment for ease of identification. (State only enforceable) (Condition 2)

This construction permit only requirement has already been fulfilled and was not included in the operating permit.

 The source shall be limited to a maximum fuel use rate as listed below: (Condition 3)

o Diesel fuel 16,800 gallons/year

The annual consumption limit has been included in the permit. A note was added to the permit to clarify that this limit was for both engines combined.

NSPS Subpart IIII Requirements(Condition 4)

Emissions from **each engine** shall be limited to the following:

0	$NO_X$	4.8 g/hp-hr
0	Non-Methane Hydrocarbons	4.8 g/hp-hr
0	CO	2.6 g/hp-hr
0	PM <sub>10</sub>	0.15 g/hp-hr

These limits, as required by NSPS Subpart IIII, were included in the permit.

APEN reporting requirements (Condition 5).

The APEN reporting requirements are included in Section IV (General Conditions) Condition 22.e of the operating permit.

• All previous versions of this permit are cancelled upon issuance of this permit. (Condition 6).

This condition applies only to the construction permit issuance and was not included in the operating permit.

**Monitoring Plan:** In order to monitor compliance with the annual emission and fuel consumption limits, the source is required to monitor fuel consumption and calculate emissions on a monthly basis.

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Records of fuel specifications provided by the supplier will be maintained to monitor compliance with the diesel fuel standards pursuant NSPS Subpart IIII.

Compliance with the opacity limitation will be monitored by conducted Method 9 visible emission observations after every continuous 24 hours of operation or annually.

**Compliance Status:** In their Title V permit application, the source indicated that these engines were in compliance with all applicable requirements

FUG: Fugitive particulate emissions due to towers hauling and traffic activities.

Applicable Requirements: Initial approval of modification 1 of construction permit 09PB1067 is the current effective permit for fugitive emissions point. The source submitted self-certification and modification for the permit which has been drafted. However, during the permit processing period, several concerns arose and additional modifications were necessary prior to issuance. The source requested to incorporate the construction permit modifications into their Title V application and cancel the construction permit modification application. A final approval permit has not been issued for the currently effective construction permit. Under the provisions of Colorado Regulation No. 3, Part C, Section V.A.2, the Division will not issue a final approval construction permit and is allowing the initial approval construction permit to continue in full force and effect and will consider the Responsible Official certification submitted with first semi-annual monitoring and deviation report required by this operating permit to serve as the demonstration required pursuant to Colorado Regulation No. 3, Part B, Section III.G.2 The draft final approval of the construction permit has been incorporated into the permit as follows:

 Visible emissions shall not exceed twenty percent (20%) opacity during normal operation of the source. During periods of startup, process modification, or adjustment of control equipment visible emissions shall not exceed 30% opacity for more than six minutes in any sixty consecutive minutes. Opacity shall be measured by EPA Method 9. (Reference: Regulation 1, Section II.A.1. & 4.) (Condition 1).

Colorado Regulation No. 1 Section II.A.6.c explicitly exempts fugitive particulate emissions from the requirements in Section II.A.1. The special conditions from Section II.A.4 listed in the construction permit - startup, process modification, and adjustment of control equipment – do not apply to this emission point. Opacity limitations do not apply to this activity and therefore were not included in the operating permit.

Particulate emission control plan (Condition 2).

The applicable particulate emission control measures from the construction permit were added as a requirement in the operating permit. The guidelines listed in the control plan were not included in the operating permit as they are not enforceable limits.

 The source shall be limited to a maximum towers traffic rate as listed below (Condition 3)

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o Towers hauled

3,600 tower sections/year

The annual emission limitation was included in the operating permit. The permit language specifies that for recordkeeping purposes, one tower section "haul" occurs when the tower section is transported off site. The emission limitation was increased in accordance with an APEN submitted November 16, 2012.

Fugitive particulate emissions shall not exceed the following limitations.
 Compliance with these fugitive emission limits shall be demonstrated by not exceeding the production limits and by following the particulate emission control plan. (Condition 4)

o PM 5.1 tons/year o  $PM_{10}$  1.7 tons/year o  $PM_{2.5}$  0.2 tons/year

The annual emission limitations were included in the operating permit. The limits were increased in accordance with the increased production requested by the APENs submitted on November 16, 2012. Compliance with the particulate limits is presumed as provided for in the construction permit.

APEN reporting requirements (Condition 5).

The APEN reporting requirements are included in Section IV (General Conditions) Condition 22.e of the operating permit.

• All previous versions of this permit are cancelled upon issuance of this permit. (Condition 6).

This condition applies only to the construction permit issuance and was not included in the operating permit.

**Emission Factors:** Emissions from fugitive particulate emissions have been calculated based on emission factors from EPA's AP-42.

**Monitoring Plan:** Records will be kept of the quantity of towers hauled on a twelvementh rolling basis. In the absence of credible evidence to the contrary, compliance with the annual emission limitations shall be presumed given compliance with the throughput limits and particulate emission control plan.

**Compliance Status:** In their Title V permit application, the source indicated that these activities were in compliance with all applicable requirements

## IV. Insignificant Activities

The source identified in the Title V permit application the following general categories of insignificant activities and specific insignificant activities that occur at the facility:

- Fourteen (14) air handling units associated with production processes < 5 MMBtu/hr</li>
- One (1) industrial oven < 5 MMBtu/hr</li>
- Ovens and stovetops in admin cafeteria

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- Haz-waste 90 day accumulation area < 5,000 gallons</li>
- One (1) 2,000 gallon propane tank
- Lubricating oil storage tanks < 300 gallons</li>
- One (1) 10,000 gallon diesel tank and dispenser
- Two (2) 2,500 gallon diesel generator tanks
- One (1) 180 gallon diesel tank for fire pump riser
- Thirty two (32) air handling units < 10 MMBtu/hr
- Commercial cooking operation
- Bulk gas storage of compressed air, oxygen, nitrogen, and argon
- Solvent recovery system
- Abrasive blasting
- Welding and cutting operations

Two diesel generators and fugitive dust emissions were identified in the Title V application as insignificant activities. However, since these emissions units are subject to requirements, they are not considered insignificant and were included in the specific operating permit conditions.

The permit listed several insignificant activities that were not stationary sources, such as landscaping equipment brought onsite periodically from contractors. These activities were not listed in the permit.

# V. Alternative Operating Scenarios

No alternative operating scenarios were requested by the facility.

### VI. Permit Shield

In their original Title V permit application, the source did not request any specific non-applicable requirements to be identified in the permit.

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